GOVERNORS STATE UNIVERSITY
College of Business and Public Administration

Course: MIS 515 Forecasting Techniques for Managers

Instructor: Charles Olson

Session: Jan/Apr 1995, Winter Trimester, Block I
Monday, 7:30-10:15 pm

Phone No.: 708-534-4954

Prerequisites: MGT 362 or MGT 510; MGT 301

Credit: Three graduate credits (or for qualified undergraduate students, three undergraduate credits). Note that graduate credit requires a greater quantity of work for the same number of units then is generally required for undergraduate credits. The quality standards are also higher than those for undergraduates.

Description:

A pervasive characteristic of management decision making is that it takes place under imperfect knowledge of the future. Consequently, most management decisions are based on a forecast, whether or not formal forecasting techniques are used. The purpose of this course is to discuss the more formal nature of forecasting and its relationship to decisions managers must make. The course will consider classes of forecasting problems with which a manager must cope, the techniques that are available to assist in this effort, and case situations in which forecasting problems are encountered. Pedagogy includes lectures, class discussion, and case problems. Considerable use will be made of Lotus 1-2-3 software and other computer software.

Objectives:

Successful completion of this course requires that the student:

1. Recognize and comprehend important classes of forecasting problems.

2. Comprehend the following forecasting techniques that are widely used to deal with specific forecasting problems:

   - *polling techniques* involving someone's expert judgement about what will happen.

- ***extrapolation techniques***, in which past values and past changes in the variable of interest are considered as the basis for future projections of that variable. Included in this category are various types of naive models (e.g., persistence and momentum forecasts), moving averages, time series decomposition and exponential smoothing.

- ***correlation techniques***, in which past relationships are investigated between the variable to be forecasted and other variables thought to be related to it. Lead-lag indicators fall into this category, as do barometric indexes, which are based upon a "leading series." The essence of these techniques is the thinking that the value or series to be forecasted might be more accurately predicted by first predicting the value of the related variable and, then, applying the historical functional relationship to predict the value of the variable of interest.

- ***structural model techniques***, in which a cause-effect model is postulated expressing the relationship between the variable to be forecast and other variables that, on the basis of underlying logic or theory can be expected to have an impact on the forecasted viable. Parameters of the model are estimated from statistical analysis of past data. This approach is particularly useful in forecasting variables such as market share, which can be influenced by manipulating variables over which management has control--advertising, sales force expenditures, etc.

- ***Autogressive Models***, in which values of the dependent variable are functions of previous values of that same variable.

- ***Lagged Models***, in which values of the dependent variable (e.g., sales) are a function of earlier values of a different variable (e.g., advertising).

- ***Diffusion/Epidemic Models***, in which the number of persons "infected" this period depends on how many persons are already infected, and on how many persons remain uninfected.

3. Apply the forecasting techniques to unstructured case situations.

4. Develop skills in using spreadsheet software and statistical software in implementing forecasting techniques.

5. Develop skills in reporting and explaining forecasts to managers.

Resources:

Textbook: Wilson and Keating, Business Forecasting, Richard D. Irwin, 1994

Lotus 1-2-3, Quatro Pro or other spreadsheet/graphical software.
SORITEC, Minitab or other statistical software.

Case Assignments: class handouts.

Evaluation:

	Graduate	
Twelve weekly assignments each)	60	(@ 5 points
Forecasting Project	15	
Class Presentation and Discussions	5	
Attendance	5	
Final Exam	15	
Instructor Evaluation	0-1	
	100-101	

Grades are typically assigned on the following basis:

A	91-100
B	81-90
C	71-80
D	61-70
F	60 or lower

Office Hours:

M: 7:00-7:30pm, Wed: 3:15-4:15p - 7:00-7:30p

MAJOR TOPICS

INTRODUCTION
POLLING TECHNIQUES
QUANTITATIVE TECHNIQUES: PRELIMINARY CONSIDERATIONS
EXTRAPOLATION TECHNIQUES
- Time Series Decomposition
  - Trend Analysis/Seasonal Adjustment/
  - Cyclical and Residual Componants
  - Exponential Smoothing
  - Single/Double

MOMENTUM FORECASTS WITH SHIFTING DEMOGRAPHICS
CORRELATION TECHNIQUES
- Simple Regression Analysis/Mulltiple Regression Analysis

STRUCTURAL MODELS
MODEL BUILDING
AUTOREGRESSIVE MODELS
LAGGED VARIABLES
MARKET POTENTIAL MODELS
DIFFUSION/EPIDEMIC MODELS

TENTATIVE APPLICATIONS

Case or Problem	Topic
1995 Super Bowl Outcome	"Equivalent Lottery Method"
Morgan Guarantee Trust	"Jury of Executive Opinion"/Group Subjective Probability Assessment
'Bottom Up' Sales Force Estimates of Future Sales	Calibrating Biased Forecasts
Metz Instruments	Error Measurement/Comparison with Naive Forecasts
Beth Israel Hospital	Stationary Random Process--Y-Bar Predictor
Controlling Cash Balances	Meandering Random Walk--Y_t Predictor
Cartigan's Mobile Home Park	Forecasting Sophistication versus Managerial Usefulness
Retail Car Sales	Exploratory Data Analysis
Mobile Home Shipments	Moving Averages
United Microcircuits	Single Exponential Smoothing
Eastern Electric	Double Exponential Smoothing
Olympia Brewing (A)	Momentum Forecasts
Terri Lee	Linear and Nonlinear Trend Projection
Lady Cantrell	Decomposition: Deseasonalization & Seasonal indexes
Soft Drink Industry	Comparison of Decomposition, Smoothing & Linear Trend Projection
Wendy's	Pattern Changes
Modern Plastics	Model Selection
Scheduling Mail Orders	Prediction with Simple Regression
Longhorn Cement	
Denver Air Traffic	Correlation Methods
Longhorn Cement	Multiple Regression
Franklin Electric (A)	Econometric Modeling
New Food	Controlled Variable Regression in Test Marketing
Lydia Pinkham	Autoregression
Supermarket Sales	Box-Jenkins ARIMA Modeling
Smith Foods	Penetration & Repeat Purchase Models